Evolutionary Systematics. 8 2024, 91–100 | DOI 10.3897/evolsyst.8.123108

New species of the pseudoscorpion genus *Pararoncus* (Pseudoscorpiones, Syarinidae) from Korea

Kyung-Hoon Jeong[1,2,3,4], Danilo Harms[5,6,7], Jung-Sun Yoo[2]

1 *Seoul National University, 1, Gwanak-ro, Gwanak-gu, Seoul, 08826, Republic of Korea*
2 *National Institute of Biological Resources, Species Diversity Research Division, Environmental Research Complex, Hwangyeong-ro 42, Seo-gu, Incheon, 22689 Republic of Korea*
3 *Department of Agricultural Convergence Technology, Jeonbuk National University, Jeonju, Republic of Korea*
4 *Lab of Insect Phylogenetics & Evolution, Department of Plant Protection & Quarantine, Jeonbuk National University, Jeonju, Republic of Korea*
5 *Museum of Nature Hamburg – Zoology, Leibniz Institute for the Analysis of Biodiversity Change, Martin-Luther-King-Platz 3, Hamburg, 20146, Germany*
6 *Harry Butler Institute, Murdoch University, Murdoch, Australia*
7 *Australian Museum Research Institute, Australian Museum, Sydney, Australia*

https://zoobank.org/9426EE73-0CD0-4AFB-98A8-F211FC5FACD3

Corresponding author: Kyung-Hoon Jeong (ds16203@snu.ac.kr)

Academic editor: Stephanie F. Loria ♦ **Received** 15 March 2024 ♦ **Accepted** 22 March 2024 ♦ **Published** 2 April 2024

Abstract

Two new species of the pseudoscorpion genus *Pararoncus* Chamberlin, 1938 are described from Korea. Detailed descriptions, habitus pictures, and illustrations of *Pararoncus leonardi* **sp. nov.** and *P. taeyoungi* **sp. nov.** are provided. The current distribution of the genus *Pararoncus* is mapped and a taxonomic key for all species is provided.

Key Words

false scorpions, morphology, pseudoscorpions, South Korea, taxonomy

Introduction

Pseudoscorpions are a "neglected" invertebrate lineage in Korea and 7 families, 12 genera, and 25 species (WPC 2023) are presently recognized although recent barcoding studies have indicated a much higher species diversity (Ohira et al. 2018). The family Syarinidae Chamberlin, 1930 (18 genera and 125 species worldwide) is represented in Korea by a single species, *Pararoncus japonicus* (Ellingsen, 1907), that is also known from leaf litter habitats in Japan. Syarinids are interesting pseudoscorpions morphologically that differ from other pseudoscorpions by the presence of the lanceolate trichobothrium **t** on the movable chelal finger and a granulate pleural membrane, although the trichobothrium **t** can also be simple in some species (Harvey 1992; Muchmore 1996; Zaragoza 2010; Kolesnikov and Turbanov 2018; Mau et al. 2022). The Palearctic genera of Syarinidae are also interesting from a biogeographical perspective because they often have regional and perhaps relictual distributions, e.g. *Pararoncus* is known from caves and leaf litter habitats in Korea and Japan, *Alocobisium* has species in high altitude habitats throughout central Asia, *Arcanobisium* and *Lusoblothrus* are ancient cave relicts in Spain and Portugal (Zaragoza 2020), *Hadoblothrus* is known exclusively from caves in Greece and Italy (Mahnert 2013), *Pseudoblothrus* from caves on the Crimeran Penisula, France, Switzerland and Italy (Kolesnikov and Turbanov 2018), and *Microcreagrina* also includes cave endemics from the Iberian Peninsula and Canary Islands (World Pseudoscorpiones Catalog 2023).

Copyright *Kyung-Hoon Jeong et al.* This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

The syarinid genus *Pararoncus* Chamberlin, 1938 presently comprises seven species. Of these, two species are troglobitic narrow-range endemics (*P. rakanensis* (Morikawa, 1957), *P. uenoi* (Morikawa, 1957)), and three species are troglophiles (*P. chamberlini* (Morikawa, 1960), *P. oinuanensis* (Morikawa, 1957) and *P. yosii* (Morikawa, 1960). Only *Pararoncus japonicus* (Ellingsen, 1907) seems to be widespread in surface habitats and has been recorded from both Korean Peninsula and Japan). The status of *P. histrionicus* Chamberlin, 1938 is uncertain since the holotype was "taken at quarantine in Hawaii" but originated from an unknown locality in Japan (Chamberlin, 1938).

In this paper two new species of the genus *Pararoncus* from montane habitats (741/1439 m in *P. leonardi* sp. nov., 621 m/1445 m in *P. taeyoungi* sp. nov.) of the Korean Peninsula are described and an updated identification key of all species in this genus is provided.

Materials and methods

All specimens used for this study are deposited in the National Institute for Biological Resources (NIBR), South Korea and preserved in 70% ethanol. They were examined using a Leica MSV266 stereomicroscope, with images taken using a Leica Z16 APO stereomicroscope and 400DC (4M) sCMOS camera (TUCSEN, Fuzhou, China) with Mosaic Analysis Software 2.4 attached to a Leica MSV266. Scanning electron micrographs were taken using a Hitachi TM4000Plus scanning electron micrograph (SEM) system. Measurements and terminology follow Chamberlin (1931), Harvey (1992), Judson (2007), Harvey and Edward (2007) and Harvey et al. (2012). Illustrations were created using Adobe Illustrator 2023 and Adobe Photoshop 2023 (Adobe Inc.) and the distribution map was produced with QGIS 3.22.10 (OSGeo). Abbreviations of chelal trichobothria: **b** – basal, **sb** – subbasal, **st** – subterminal, **t** – terminal, **ib** – internal basal, **isb** – internal subbasal, **eb** – external basal, **esb** – external subbasal, **it** – internal terminal, **ist** – internal subterminal, **et** – external terminal, **est** – external subterminal. Abbreviations of leg segments: **fe** – femur, **pa** – patella, **ti** – tibia, **mt** – metatarsus, **ta** – tarsus. Abbreviations of male genitalia: **ejca** – ejaculatory canal atrium, **lgs** – lateral genital sac, **mgs** – median genital sac.

Systematics

Family Syarinidae Chamberlin, 1930

Korean name: Gin-pal-eo-ri-jeon-gal-gwa 긴팔어리전갈과

Subfamily Chitrellinae Beier, 1932

Genus *Pararoncus* Chamberlin, 1938

Type species. *Pararoncus histrionicus* Chamberlin, 1938, by original designation.

Diagnosis. *Pararoncus* can be distinguished from other syarinid genera by the following characters: epistome present (Figs 2A, 4B, 6B); movable chelal finger with an accessory tooth (or tooth-like sensorium Fig. 2E); trichobothrium **ib** on the paraxial side of chela and closer to **esb**; **ist** median and between **est** and **isb** (Figs 2D, 4C, 6E); and coxa I with an apical process (Figs 2B, C, 4A, 6A) (Chamberlin 1938; Ćurčić 1979).

Pararoncus leonardi Jeong & Harms, sp. nov.

https://zoobank.org/BBE60406-5233-4F09-A7A0-C6B010EF7DBF

Korean name: So-baek-gin-pal-jeon-gal-but-i 소백긴팔전갈붙이

Type material. ***Holotype.*** Female (NIBRIV0000905713). Korea: Chungcheongbuk-province: Mt. Sobaek, San 13–5, Yongbuwon-ri, Daegang-myeon, Danyang-gun. 36°54'00"N, 128°26'11.09"E. Alt 741 m a.s.l. 13. Apr – 17. May 2022. JH Oh leg.

***Paratypes*:** NIBRIV0000905714 (one male), NIBRIV0000905715 (two females, and two males), same data as holotype.

Etymology. This species is named in honor of the National Basketball Association player Kawhi Leonard who has the longest wingspan in the American National Basketball Association.

Diagnosis. *Pararoncus leonardi* sp. nov. is similar to *P. taeyoungi* sp. nov. but differs in the body size and ratios of the leg tarsus I: *P. taeyoungi* sp. nov is smaller than *P. leonardi* sp. nov. (2.77–3.32 mm in *P. taeyoungi* vs. 3.63–3.98 mm in *P. leonardi*) and has a smaller ratio of tarsus I (3.8–4.9 L/D vs 5.4–8.8 L/D.). Both species differ from every other species by having four distinct eyes with lenses (two eyes in *P. japonicus*, *P. histrionicus*, *P. chamberlini*, *P. yosii*, and *P. oinuanensis*; no eyes in the *P. rakanensis* and *P. uenoi*).

Description (Fig. 3). Female (holotype). Colour. Reddish-brown. Pedipalps with reddish-browncolour. Abdominal sclerites dark brown, legs paler than the tergites.

Cephalothorax. Carapace 1.20 times longer than broad; without furrows with four well-developed eyes with lenses; epistome long and pointed; carapacal chaetotaxy 6–6: 26; all setae long and acuminate; six lyrifissures. Manducatory process with two long, acuminate setae; 5–7 setae on each pedipalpal coxa. Coxal chaetotaxy 15: 15: 8: 16.

Chelicera. Cheliceral cuticle smooth; seven setae on the cheliceral palm, one on the middle of the movable finger. 14 marginal teeth on the movable finger, all teeth equal in size; 18 marginal teeth on the fixed finger and one additional big tooth in the middle on movable finger. Galea absent. Rallum with eight blades, and the two basal blades smaller than the others. Serrula exterior with 25 blades.

Pedipalp. Trochanter 2.31, femur 3.95, patella 2.56, chela 3.73 times longer than broad, movable finger 1.82 times longer than hand. Fixed finger with eight trichobothria, movable finger with four trichobothria. Trichobothria **it** and **ib** on the paraxial side of the fixed finger; **ib** between **isb** and **esb**, but closer to **esb**; **eb** and **esb** grouped

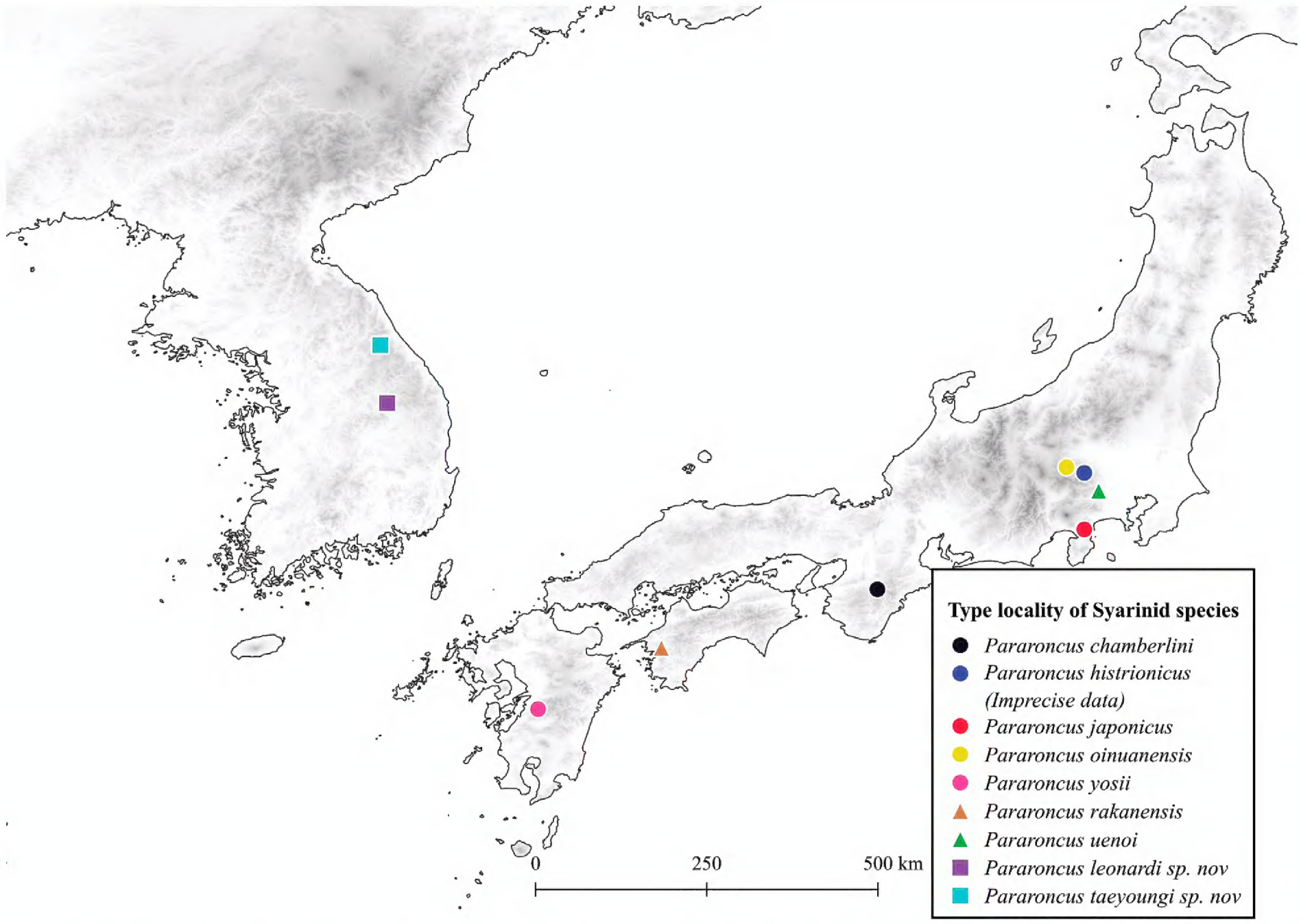

Figure 1. Type localities of all *Pararoncus* species according to the World Pseudoscorpiones Catalog (2023). The two new species are represented by squares, circles indicate epigean species in Japan, and triangles indicate troglobitic species.

together; **ist** on the middle of the fixed finger, almost the same distance between **et** and **eb**; **et**, **est**, and **it** grouped together, **it** closer to **et**; **t**, **st**, **sb**, **b** almost same distance, but **t**, **st** close together.

Marginal teeth small and contiguous; juxtadentate teeth on both finger; acute teeth on fixed finger; acute teeth on the anterior, rounded teeth on the posterior of the movable finger; movable finger with 63, fixed finger with 67 marginal teeth; one accessory-like tooth on the lateral side of the tip of the movable finger, as in other congeneric species.

Legs. Leg I: trochanter 1.31, femur 3.51, patella 3.25, tibia 5.85, metatarsus 3.75, tarsus 5.40 times longer than deep. Metatarsus of leg IV longer than the tarsus; pseudotactile seta present in basal position of the tarsus and metatarsus of leg IV, and the medial position of the tibia of leg IV. Arolium simple and undivided, shorter than the claws, and simple.

Abdomen. Anterior pleural membrane papillo-granulate; posterior pleural membrane papillo-striate; all tergites and sternites undivided; all setae long and acuminate; tergal chaetotaxy 6: 13: 16: 16: 14: 15: 15: 15: 13: 12: 8: 2; sternal chaetotaxy 6: 18: 21: 20: 20: 21: 19: 17: 17: 8: 2.

Dimensions **(in mm).** Body length 3.63; cephalothorax: carapace 0.85/0.71, anterior eyes 0.06, posterior eye 0.07; chelicera: total 0.69/0.33, movable finger 0.46; pedipalp: trochanter 0.65/0.28, femur 1.08/0.27, patella 0.93/0.36, chela 2.02/0.54, movable finger 1.30, hand 0.72; leg I: trochanter 0.22/0.17, femur 0.57/0.16, patella 0.44/0.13, tibia 0.57/0.10, metatarsus 0.29/0.08, tarsus 0.34/0.06; leg IV: trochanter 0.48/0.22, femur + patella 0.96/0.31, tibia 0.89/0.14, metatarsus 0.36/0.11, tarsus 0.43/0.09.

Variation (two females, paratypes). Cephalothorax. Carapace 1.24–1.27 times longer than broad.

Pedipalp. Trochanter 2.31, femur 4.16–4.18, patella 2.49–2.71, chela 3.49–3.63 times longer than broad, movable finger 1.62–1.73 times longer than hand. Movable finger with 60–67, fixed finger with 67–70 marginal teeth.

Legs. Leg I: trochanter 1.48–1.55, femur 3.39–4.37, patella 2.93–3.89, tibia 5.32–5.83, metatarsus 3.58–3.72, tarsus 7.21–8.83 times longer than deep; leg IV: trochanter 2.04–2.38, femur + patella 2.82–3.18, tibia 5.64–6.23, metatarsus 3.42–3.58, tarsus 4.67–4.86 times longer than deep.

Dimensions **(in mm).** Body length 3.63; cephalothorax: carapace 0.85/0.71, anterior eye 0.06, posterior eye 0.07; chelicera: total 0.69/0.33, movable finger 0.46; pedipalp: trochanter 0.65/0.28, femur 1.08/0.27, patella 0.93/0.36, chela 2.02/0.54, movable finger 1.30, hand 0.72; leg I: trochanter 0.22/0.17, femur 0.57/0.16, patella 0.44/0.13, tibia 0.57/0.10, metatarsus 0.29/0.08, tarsus 0.34/0.06; leg IV: trochanter 0.48/0.22, femur + patella 0.96/0.31, tibia 0.89/0.14, metatarsus 0.36/0.11, tarsus 0.43/0.09.

Variation (three males, paratypes). Cephalothorax. Carapace 1.19 times longer than broad.

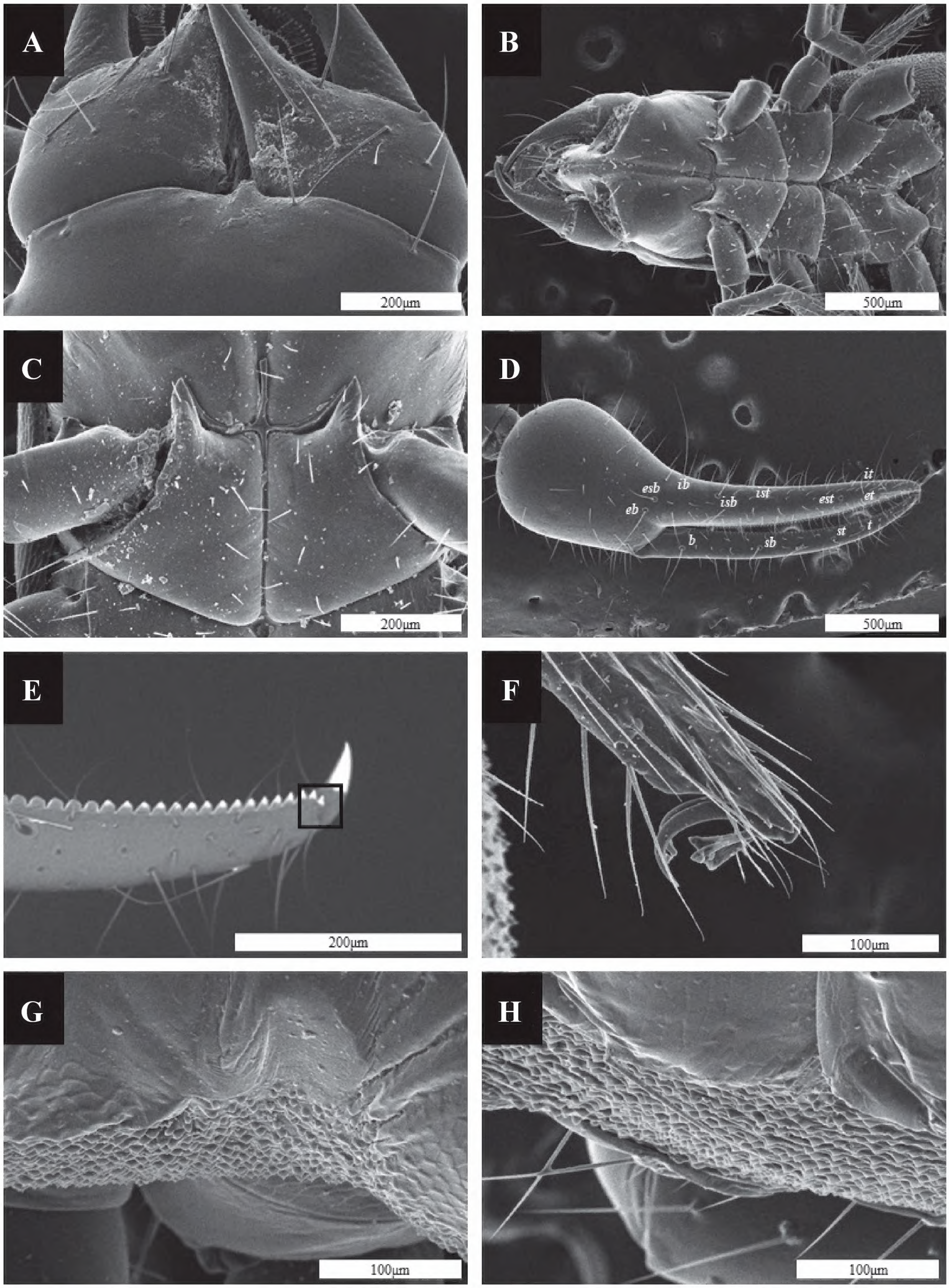

Figure 2. Genus characters of *Pararoncus*. **A.** Epistome; **B.** Coxa; **C.** Coxa I with epical process; **D.** Left chela, lateral view; **E.** Movable chelal finger with accessory tooth (accessory tooth in the box); **F.** Claws and arolium; **G.** Anterior pleural membrane; **H.** Posterior pleural membrane.

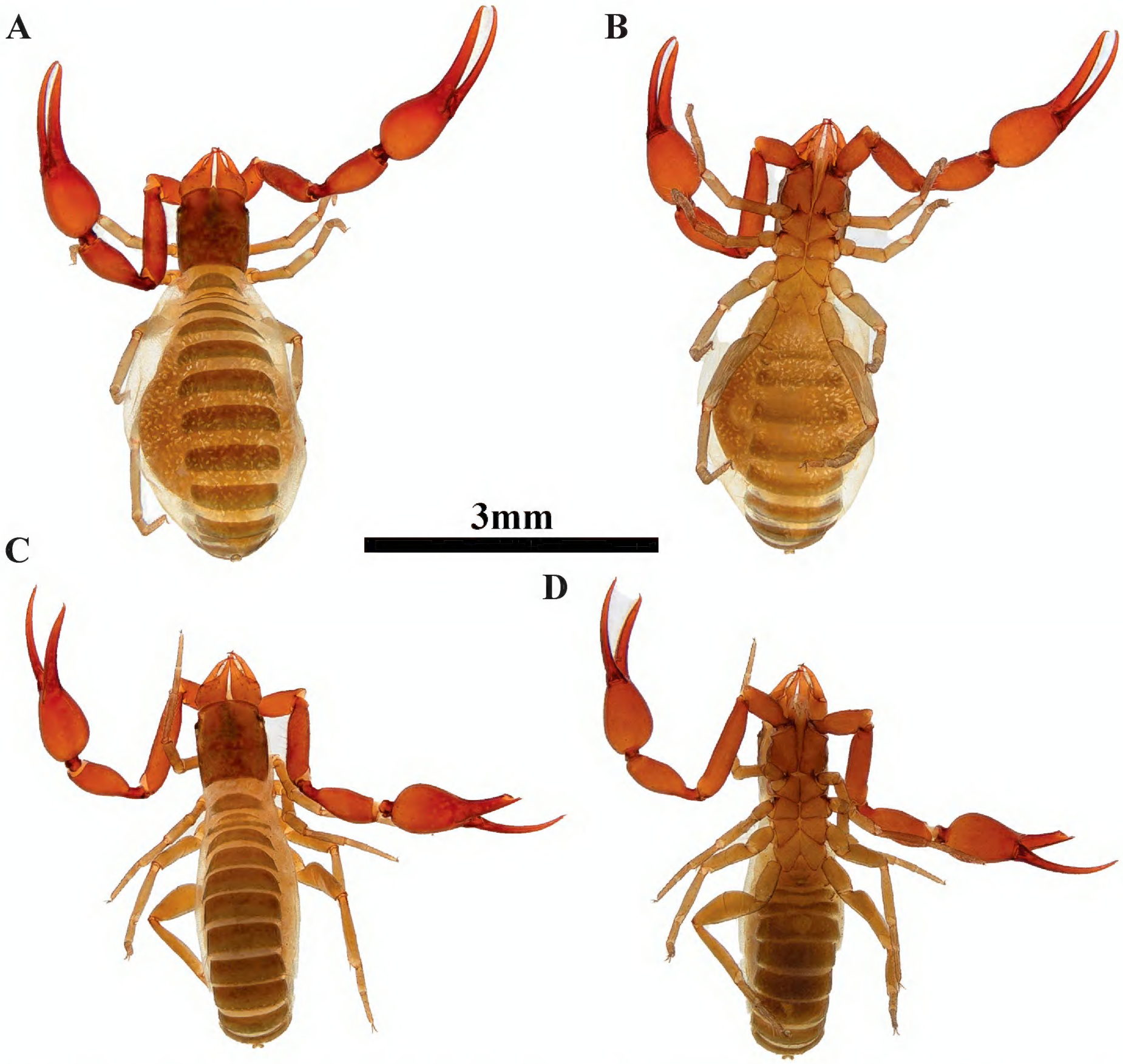

Figure 3. Habitus of *Pararoncus leonardi* sp. nov.: **A.** Female holotype in dorsal view; **B.** Female holotype in ventral view; **C.** Male paratype, dorsal; **D.** Male paratype ventral. Scale bars: 3 mm.

Chelicera. Seven setae on the cheliceral palm, one on the middle of the movable finger. 15–18 marginal teeth on the movable finger; 17–19 marginal teeth on the fixed finger. Galea absent. Rallum with 6–7 blades and the two basal blades smaller than the others. Serrula exterior with 23–25 blades.

Pedipalp. Trochanter 2.03–2.33, femur 4.42–4.96, patella 2.81–2.89, chela 3.73–3.97 times longer than broad, movable finger 1.41–1.82 times longer than chelal hand. Movable finger with 63–66, fixed finger with 67–70 marginal teeth.

Legs. Leg I: trochanter 1.45–1.53, femur 3.73–4.31, patella 2.65–3.36, tibia 5.37–5.92, metatarsus 3.13–3.35, tarsus 5.54–5.90 times longer than deep; leg IV: trochanter 2.02–2.29, femur + patella 3.30–3.39, tibia 5.78–6.33, metatarsus 3.60–3.67, tarsus 5.10–5.92 times longer than deep.

Male genitalia. Typical shape for the genus and with a circular opening area on the sternite VI, short and dense setae present on sternites III, IV and V: 13–23 setae on sternite III, 21–28 on sternite IV, and 32–35 on sternite V (Fig. 4H). Internal genialia with rounded ejaculatory canal atrium, with apical top; long and slender lateral genital sacs; T-shaped median genital sac (Fig. 4I).

***Dimensions* (in mm).** Body length 3.32–3.98; cephalothorax: carapace 0.91–0.95/0.72–0.76, anterior eye 0.07–0.08, posterior eye 0.05; chelicera: total 0.60–0.70/0.33–0.34, movable finger 0.42–0.52; pedipalp: trochanter 0.59–0.60/0.26, femur 1.09–1.11/0.26–0.27, patella 0.86–0.92/0.34–0.35, chela 1.84–2.03/0.53–0.56, movable finger 1.17–1.26, hand 0.67–0.78; leg I: trochanter 0.26–0.27/0.17–0.18, femur 0.50–0.56/0.13–0.15, patella 0.40/0.10–0.14, tibia 0.54/0.09, metatar-

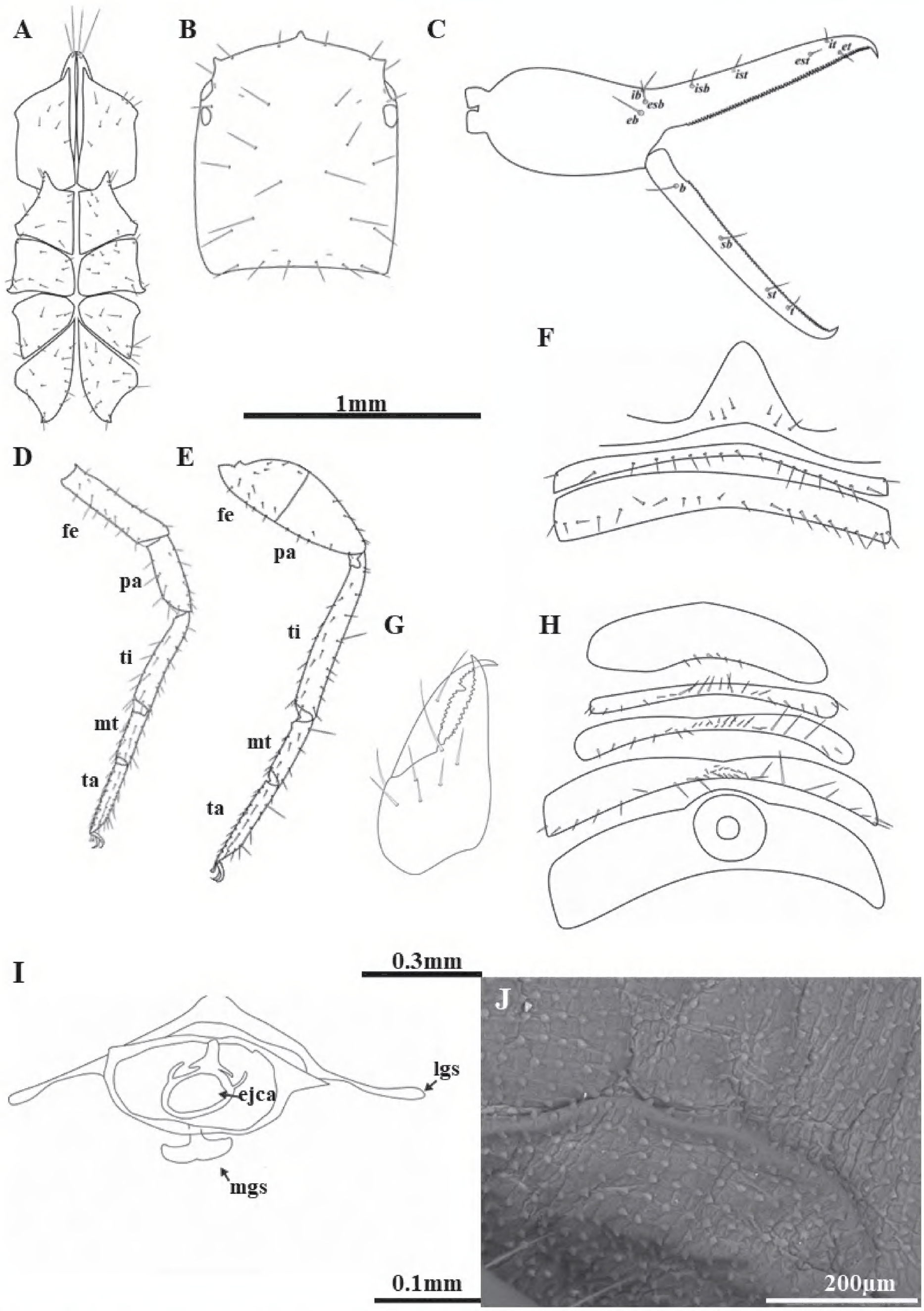

Figure 4. Drawings of *Pararoncus leonardi* sp. nov.: **A.** Coxa; **B.** Carapace from dorsal; **C.** Right chela from lateral; **D.** Leg I; **E.** Leg IV; **F.** External genitalia of female holotype; **G.** Chelicera from dorsal; **H.** Sternite of male paratype; **I.** Genitalia of male paratype; **J.** Anterior pleural membrane. Scale bars: 1 mm (**A–E**); 0.3 mm (**F–H**); 0.1 mm (**I**) 200 µm (**J**).

sus 0.27/0.07–0.08, tarsus 0.41–0.58/0.06–0.07; leg IV: trochanter 0.42–0.47/0.20–0.21, femur + patella 0.95–1.02/0.32–0.34, tibia 0.87–0.91/0.14–0.16, metatarsus 0.36–0.39/0.11, tarsus 0.43–0.48/0.09–0.10.

Habitat. This species was collected from moist leaf litter habitats at Mt. Sobaek in the Sobaek Mountains.

Pararoncus taeyoungi Jeong & Harms, sp. nov.

https://zoobank.org/4E747A74-3F99-4B0A-B61A-73D8A456A0B3

Korean name: Tae-baek-gin-pal-jeon-gal-but-i 태백긴팔전갈붙이

Type material. ***Holotype.*** Female (NIBRIV0000905716). Korea: Gangwon-province: Mt. Bangtae, 295–5, Bangdong-ri, Girin-myeon, Inje-gun, 37°55'19.39"N, 128°24'14.01"E, litter sample (sifting and Berlese-Tullgren Funnel trap). Alt 621 m a.s.l. 01. Oct 2022. KH Jeong leg.

Paratypes. NIBRIV0000905717 (one male adult), NIBRIV00009050718 (two females, and two males), same data as holotype.

Etymology. This species is named after the former Korean Basketball League player Tae Young Moon who has the longest wingspan ratio in the Korean Basketball League.

Diagnosis. This species is most similar to *Pararoncus leonardi* sp. nov., but has different characteristics from the following characters; the body size, and ratio of the tarsus of leg I. *P. leonardi* sp. nov. has a bigger body size (3.63–3.98 mm in *P. leonardi* vs 2.77–3.32 mm in *P. taeyoungi*) and larger ratio of tarsus I (5.4–8.8 L/D in *P. leonardi* vs 3.8–4.9 L/D in *P. taeyoungi*) than *P. taeyoungi* sp. nov., respectively.

Description (Fig. 5). Female (holotype). Colour. Reddish-brown. Pedipalps with reddish-brown color, hind margin of abdomen segments with dark brown.

Cephalothorax. Carapace 1.07 times longer than broad; without furrows but with four well-developed eyes with lenses; epistome long and pointed; carapacal chaetotaxy 6–6: 26; seta long and acuminate; six lyrifissures. Manducatory process with two long, acuminate setae; 8 setae on the pedipalpal coxa; coxal chaetotaxy 10: 10: 8: 12.

Chelicera. Cheliceral cuticle smooth; seven setae on the cheliceral palm, one seta in the middle of the movable finger; 20 marginal teeth on the movable finger, one big tooth in the middle of the row on the movable finger; 18 marginal teeth on the fixed finger, all teeth equal in size on the fixed finger. Galea absent. Rallum with six blades, almost the same size; serrula exterior with 30 blades.

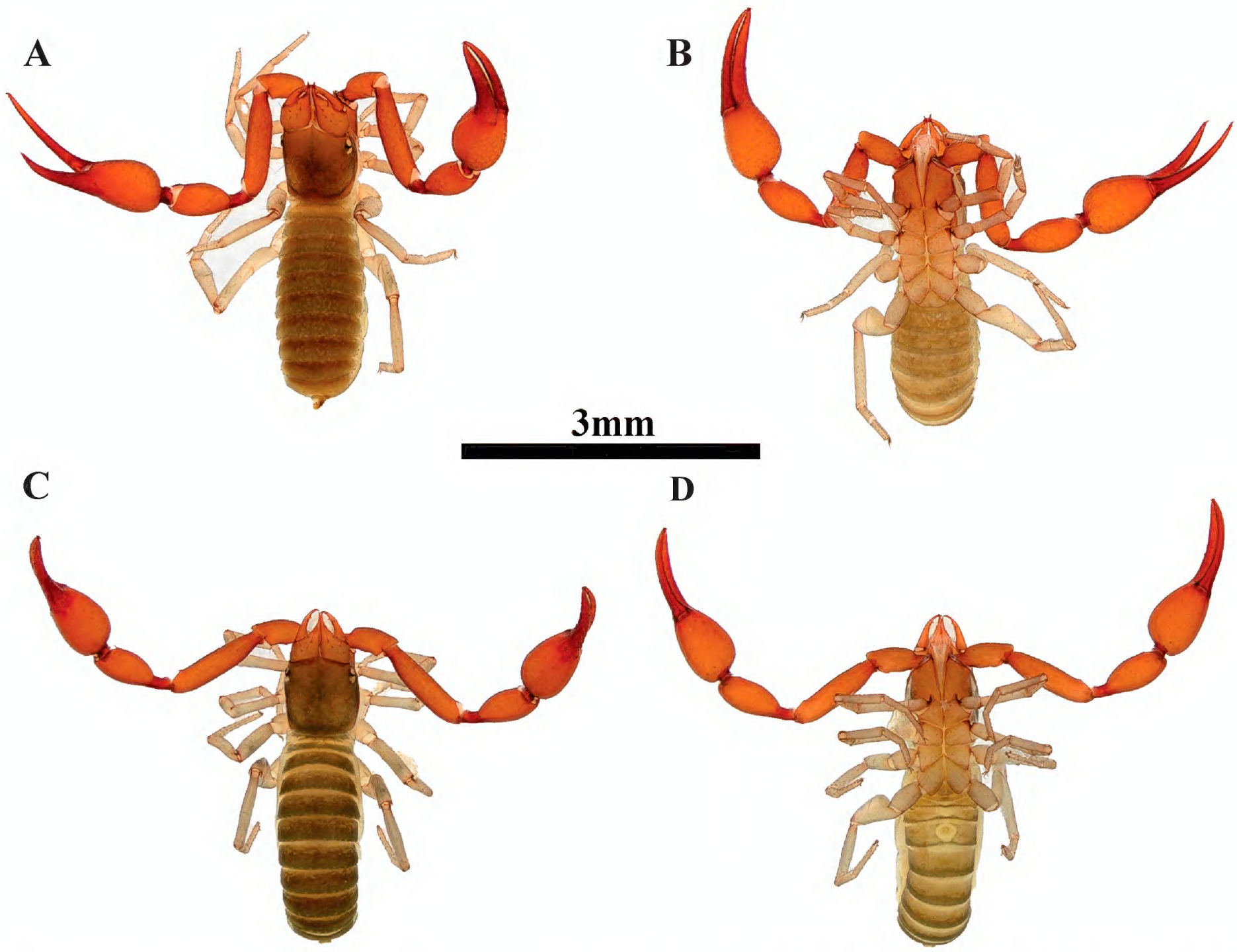

Figure 5. Habitus of *Pararoncus taeyoungi* sp. nov.: **A.** Female holotype in dorsal view; **B.** Female holotype in ventral view; **C.** Male paratype, dorsal; **D.** Male paratype, ventral. Scale bars: 3 mm.

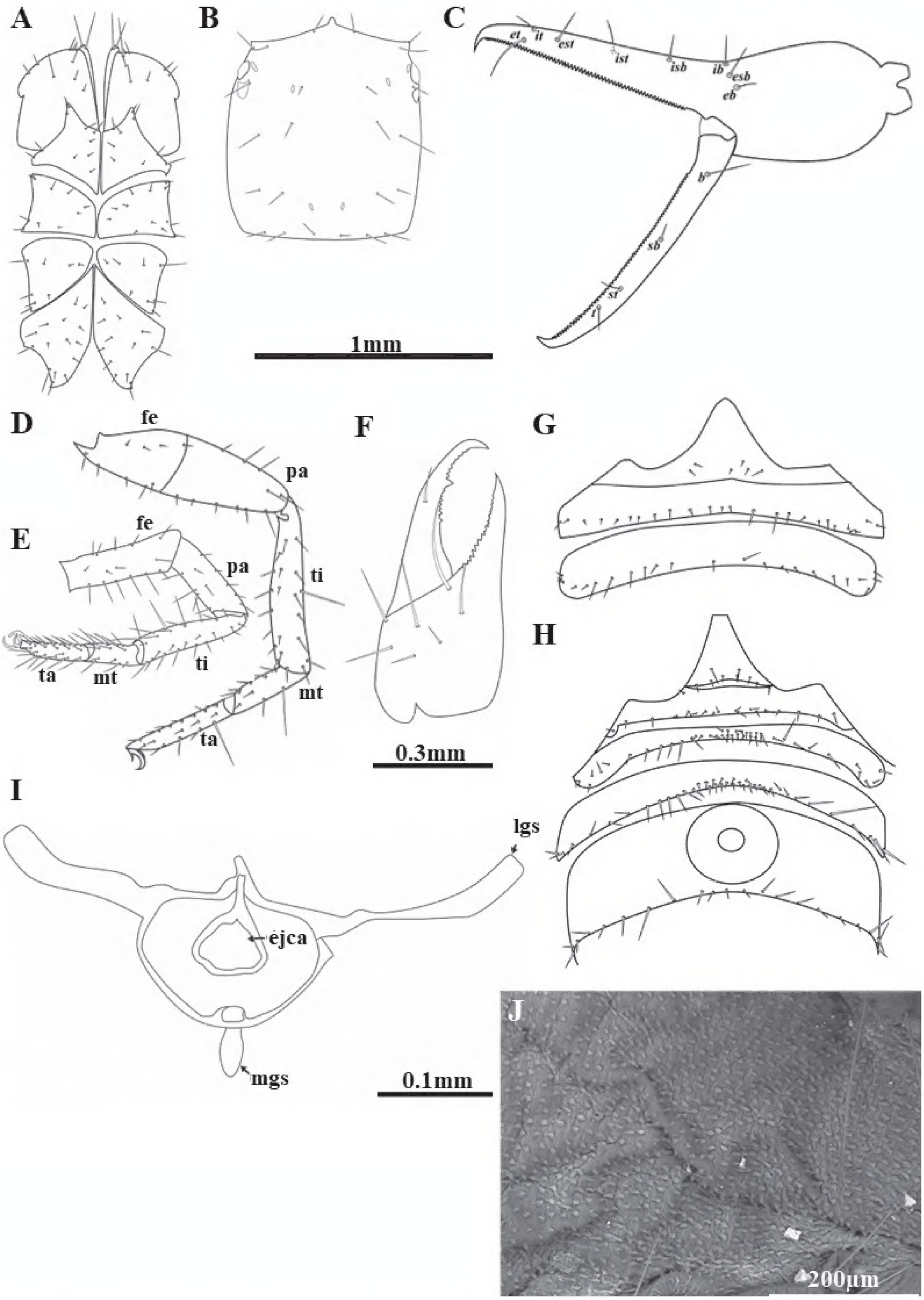

Figure 6. Drawings of *Pararoncus taeyoungi* sp. nov.: **A.** Coxa; **B.** Carapace from dorsal; **C.** Left chela from lateral; **D.** Leg IV; **E.** Leg I; **F.** Chelicera from doral; **G.** External genitalia of female holotype; **H.** Sternite of male paratype; **I.** Internal geenitalia of male paratype; **J.** Pleural membrane. Scale bars: 1 mm (**A–E**); 0.3 mm (**F–H**); 0.1 mm (**I**); 200 µm (**J**).

Pedipalp. Trochanter 2.17, femur 3.43, patella 1.32, chela 3.34 times longer than broad, movable finger 1.64 times longer than hand. Fixed finger with eight trichobothria, movable finger with four trichobothria; **ist**, **ib** on the antiaxial position of the fixed finger; **ib** between **isb** and **esb**, but closer to **esb**; **ist** on the medial position of the fixed finger, almost the same distance between **et** and **eb**; **et**, **est**, and **it** forming a same group, but **it** little closer to **et**; **eb** and **esb** forming a group, on the basal of the fixed finger; **t**, **st**, **sb**, **b** almost same distance, but **t** and **st** little close together.

Marginal teeth small, and contiguous; juxtadentate teeth on both finger; acute teeth on the fixed finger; acute teeth on the anterior, rounded teeth on the posterior of the movable finger;; movable finger with 62, fixed finger with 60 marginal teeth; one accessory-like tooth on the side of the tip of the movable finger.

Legs. Leg I: trochanter 1.34, femur 3.66, patella 3.13, tibia 5.13, metatarsus 3.46, tarsus 3.85 times longer than deep; leg IV: trochanter 2.05, femur + patella 3.15, tibia 5.31, metatarsus 3.39, tarsus 5.08 times longer than deep. Typical for the family. Tarsus and metatarsus of leg I almost the same size; the arolium undivided, shorter than the claws; the pseudotactile seta on the basal position of the tarsus and metatarsus of leg IV, on the medial position of the patella of leg IV.

Abdomen. Anterior pleural membrane papillo-granulated; posterior pleural membrane papillo-striate; all tergites and sternites undivided; all seta long and acuminate; tergal chaetotaxy 6: 12: 12: 16: 15: 15: 15: 14: 16: 14: 5: 2; sternal chaetotaxy 4: 16: 18: 18: 19: 19: 17: 17: 17: 5: 2.

Dimensions **(in mm).** Body length 2.84; cephalothorax: carapace 0.82/0.77, anterior eye 0.07, posterior eye 0.07; chelicera: total 0.63/0.32, movable finger 0.43; pedipalp: trochanter 0.53/0.25, femur 0.82/0.24, patella 0.79/0.60, chela 1.63/0.48, movable finger 1.01, hand 0.62; leg I: trochanter 0.21/0.15, femur 0.50/0.14, patella 0.40/0.13, tibia 0.47/0.09, metatarsus 0.21/0.06, tarsus 0.20/0.05; leg IV: trochanter 0.39/0.19, femur + patella 0.82/0.15, tibia 0.82/0.15, metatarsus 0.36/0.11, tarsus 0.42/0.08.

Variation (two females, paratypes). Cephalothorax. Carapace 1.02–1.20 times longer than broad.

Pedipalp. Trochanter 2.50–2.52, femur 3.77–3.99, patella 2.56–2.67, chela 3.37–3.39 times longer than broad, movable finger 0.89–1.57 times longer than hands. Movable finger with 60–63, fixed finger with 52–55 marginal teeth.

Legs. Leg I: trochanter 1.58–1.60, femur 3.49–4.42, patella 2.81–2.92, tibia 5.03–5.04, metatarsus 3.00–3.42, tarsus 3.82–4.35 times longer than deep; leg IV: trochanter 2.30–2.33, femur + patella 3.03–3.09, tibia 5.96–6.98, metatarsus 3.51–3.80, tarsus 4.89–5.16 times longer than deep.

Dimensions **(in mm).** Body length 2.77–2.29; cephalothorax: carapace 0.71–0.90/0.69–0.75, anterior eye 0.09–0.10, posterior eye 0.09; chelicera: total 0.60–0.68/0.29–0.31, movable finger 0.45–0.49; pedipalp: trochanter 0.61–0.62/0.24, femur 0.98–1.08/0.26–0.27, patella 0.89–0.93/0.33–0.36, chela 1.88–1.91/0.55–0.57, movable finger 0.90–1.15, hand 0.73–1.01; leg I: trochanter 0.23/0.14–0.15, femur 0.53–0.59/0.13, patella 0.38–0.39/0.13–0.14, tibia 0.48–0.49/0.09–0.10, metatarsus 0.23–0.24/0.07–0.08, tarsus 0.23–0.27/0.06; leg IV: trochanter 0.41–0.45/0.18–0.20, femur + patella 0.90–0.95/0.29–0.31, tibia 0.84–0.87/0.10, metatarsus 0.34–0.38/0.10, tarsus 0.43–0.45/0.08–0.09.

Variation (Two males, paratypes). Cephalothorax. Carapace 1.18–1.22 times longer than broad. Carapacal chaetotaxy: 6–6: 26.

Pedipalp. Trochanter 2.40–2.54, femur 3.85–3.92, patella 2.43–2.72, chela 3.46–3.97 times longer than broad, movable finger 1.23–1.39 times longer than hands. Female: movable finger with 60–63, fixed finger with 52–55 marginal teeth; male: movable finger with 65–68, fixed finger with 60–67 marginal teeth.

Legs. Male, leg I: trochanter 1.48–1.72, femur 2.97–4.34, patella 2.80–3.09, tibia 5.18–5.88, metatarsus 2.56–3.64, tarsus 4.15–4.96 times longer than deep; leg IV: trochanter 1.90–2.44, femur + patella 2.69–3.44, tibia 6.12–6.61, metatarsus 3.36–3.61, tarsus 3.38–5.02 times longer than deep.

Male genitalia. Typical shape in the genus *Pararoncus*. An opening area on sternite VI; short and dense setae on sternite III, IV; 15 on sternite III, 22 on sternite IV. Small and rounded ejaculatory canal atrium; long and slender lateral genital sacs; small and undivided medial genital sac.

Dimensions **(in mm).** Body length 2.53–3.32; cephalothorax: carapace 0.76–0.91/0.65–0.75, anterior eye 0.08–0.09, posterior eye 0.08–0.10; chelicera: total 0.56–0.65/0.29–0.34, movable finger 0.39–0.46; pedipalp: trochanter 0.56–0.64/0.23–0.26, femur 0.89–1.02/0.23–0.26, patella 0.82–0.83/0.30–0.34, chela 1.64–1.88/0.46–0.53, movable finger 0.96–1.09, hand 0.77–0.80; leg I: trochanter 0.21–0.24/0.14, femur 0.42–0.57/0.13–0.16, patella 0.31–0.43/0.11–0.14, tibia 0.47–0.53/0.08–0.10, metatarsus 0.28–0.36/0.06–0.08, tarsus 0.27–0.36/0.06–0.07; leg IV: trochanter 0.37–0.44/0.18–0.21, femur + patella 0.78–0.92/0.23–0.31, tibia 0.75–0.89/0.13–0.15, metatarsus 0.29–0.34/0.09–0.10, tarsus 0.27–0.42/0.08–0.10.

Habitat. This species was collected from the moist leaf litter of Mt. Bangtae in the Taebaek Mountains.

Key to species of *Pararoncus* from Korea and Japan

1 Eyes absent (subterranean species) 2
– Eyes present (epigean species) 3
2 Carapacal chaetotaxy 4–6: 20; eight setae on tergite I; less than 110 marginal teeth on the movable chelal finger and 100 on the fixed chelal finger .....*P. uenoi* (Morikawa, 1960) (Japan: Yôzawa-dô cave, Komiya-mura, Tokyo Prefecture)
– Carapacal chaetotaxy 4–6: 24; ten setae on tergite I; more than 120 marginal teeth on the movable chelal finger and 110 on the fixed chelal finger ..... *P. rakanensis* (Morikawa, 1957) (Japan: Rakan-ana cave, Nomura-chô, Ehime Prefecture)

3 Two eyes 4
– Four eyes 8
4 More than 30 carapacal setae 5
– Less than 30 carapacal setae 6
5 Pedipalpal trochanter more than 2 times longer than broad; pedipalpal femur length more than 0.6 mm .....
..... *P. japonicus* (Ellingsen, 1907) (Japan: Yamanaka Fort Ruins, Shizuoka Prefecture)
– Pedipalpal trochanter less than 2 times longer than broad; pedipalpal femur length less than 0.6 mm .....
..... *P. histrionicus* Chamberlin, 1938 (Japan: precise locality unknown)
6 Epistomal process reduced ..... *P. yosii* (Morikawa, 1960) (Japan: Shirataki-dô cave, Iwato-mura, Miyazaki Prefecture)
– Epistomal process present 7
7 Galea present in both sexes .....
P. chamberlini (Morikawa, 1960) (Japan: Goyomatsu-dani-dô cave, Dorogawa, Tenkawa-mura, Nara Prefecture)
– Galea absent in both sexes .....
P. oinuanensis (Morikawa, 1957) (Japan: Oinu-ana cave, Nakakoshizawa, Uéno-mura, Gunma Prefecture)
8 Tarsus of leg I more than 5 times longer than deep .....
..... *P. leonardi* sp. nov. (South Korea: Mt. Sobaek, Danyang-gun, Chungcheongbuk-Province)
– Tarsus of leg I less than 5 times longer than deep .....
..... *P. taeyoungi* sp. nov. (South Korea: Mt. Bangtae, Inje-gun, Gangwon-Province)

Acknowledgments

KHJ would like to express sincere gratitude to Jithin Johnson (Sacred Heart College, India) and Dora Hlebec (University of Zagreb, Croatia) for their invaluable discussions on species identification, Jonghwa Oh for assistance in the field, and Sora Kim (Jeonbuk National University, Korea) for access to microscope and camera systems at Jeonbuk National University. This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR202304103).

References

Chamberlin JC (1931) The arachnid order Chelonethida. Stanford University Publications, University Series, (Biological Sciences) 7(1): 1–284.

Chamberlin JC (1938) New and little-known false-scorpions from the pacific and elsewhere(Arachnida-Chelonethida). Annals and Magazine of natural History 2(9): 259–285. https://doi.org/10.1080/00222933808526844

Čurčić B (1979) The genus *Pararoncus* Chamberlin 1938 (Pseudoscorpiones, Neobisiidae) in Japan. Glasnik Muzeja Srpske Zemlje, Beograd (B) 34: 169–180.

Harvey MS (1992) The phylogeny and classification of the Pseudoscorpionida (Chelicerata: Arachnida). Invertebrate Systematics 6(6): 1373–1435. https://doi.org/10.1071/IT9921373

Harvey MS, Edward KL (2007) A review of the pseudoscorpion genus *Ideoblothrus* (Pseudoscorpiones, Syarinidae) from western and northern Australia. Journal of Natural History 41: 5–8, 445–472. https://doi.org/10.1080/00222930701219123

Harvey MS, Ratnaweera PB, Udagama PV, Wijesinghe MR (2012) A new species of the pseudoscorpion genus *Megachernes* (Pseudoscorpiones: Chernetidae) associated with a threatened Sri Lankan rainforest rodent, with a review of host associations of Megachernes Journal of Natural history 46(41–42): 2519–2535. https://doi.org/10.1080/00222933.2012.707251

Judson ML (2007) A new and endangered species of the pseudoscorpion genus *Lagynochthonius* from a cave in Vietnam, with notes on chelal morphology and the composition of the Tyrannochthonini (Arachnida, Chelonethi, Chthoniidae). Zootaxa 1627(1): 53–68. https://doi.org/10.11646/zootaxa.1627.1.4

Mau SA, Harvey MS, Harms D (2022) New syarinid pseudoscorpions from Ecuador (Pseudoscorpiones, Syarinidae: Ideobisium and Ideoblothrus). European Journal of Taxonomy 821: 102–149. https://doi.org/10.5852/ejt.2022.821.1801

Morikawa K (1960) Systematic stuides of Japanese pseudoscorpions. Memoir of Ehime University (2B) 4: 85–172.

Muchmore WB (1996) A remarkable new genus and species of Pseudoscorpionida (Syarinidae) from a cave in Arizona. The Southwestern Naturalist, 145–148. http://www.jstor.org/stable/30055098

Ohira H, Sato K, Tsutsumi T, Kaneko S, Choi H-J (2018) DNA barcoding suggested the existence of cryptic species and high biodiversity of South Korean pseudoscorpions (Arachnida, Pseudoscorpiones). Journal of Asia-Pacific Biodiversity 11(3): 399–407. https://doi.org/10.1016/j.japb.2018.04.005

Reboleira ASPS, Zaragoza JA, Gonçalves F, Oromí P (2012) *Lusoblothrus*, a new syarinid pseudoscorpion genus (Arachnida) from Portugal, occupying an isolated position within the Holarctic fauna. Zootaxa 3544: 52–62. https://doi.org/10.11646/zootaxa.3544.1.4

Turbanov I, Kolesnikov V (2020) Two new cave-dwelling species of the false scorpion genus *Pseudoblothrus* Beier, 1931 (Arachnida: Pseudoscorpiones: Syarinidae) from the Crimean Peninsula. Arthropoda Selecta 29(1): 28–50. https://doi.org/10.11646/zootaxa.4374.4.4

WPC (2022) World Pseudoscorpiones Catalog. Natural History Museum Bern. http://wac.nmbe.ch [Accessed 22 March 2024]

Zaragoza JA (2010) *Arcanobisium*, a remarkable new genus, representing a new subfamily with a relictual distribution from eastern Spain (Arachnida: Pseudoscorpiones: Syarinidae). Zootaxa 2491(1): 41–60. https://doi.org/10.11646/zootaxa.2491.1.3